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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,444	06/10/2005	Jorn Lutjens	PHDE020304US	3906

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EXAMINER

KIKNADZE, IRAKLI

ART UNIT PAPER NUMBER

2882

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/538,444	Applicant(s) LUTJENS ET AL.	
	Examiner Irakli Kiknadze	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 2-4, 6 and 7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/10/2005</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graumann (US Patent 6,120,180) in view of Carol (US Patent 5,622,187).

With respect to claim 1, Grauman teaches an X-ray apparatus (1) having (Fig.1):
an X-ray source (9),
an X-ray detector (10),
a C-arm assembly (8) on which the X-ray source (9) and the X-ray detector (10) are arranged opposite one another, the C-arm assembly (8) being arranged to be rotatable about a propeller axis (B) and an axis of rotation, which axes extend perpendicularly to one another (column 4, lines 17-42),

marker arrangements (16 and 17) mounted on the X-ray source (9) and the X-ray detector (10) respectively, and

a camera arrangement (15.1 - 15.9) for detecting the marker arrangements (16 and 17) to enable the positions of the X-ray source (9) and the X-ray detector (10) to be

determined (column 5, lines 30-41), the camera arrangement (15.1 - 15.9) being arranged on the mounting device (14) for the C-arm assembly (8) (column 4, lines 65 and 66 and column 7, lines 7-13).

Graumann fails to teach that the camera arrangement (15.1 - 15.9) being arranged on the C-arm assembly (8). Carol teaches a C-arm arrangement (41) comprising a camera arrangement (102) arranged on the C-arm assembly (41) (Fig.1; column 7, lines 4-6) to detect marker arrangements (90) (column 8, lines 61-65). This arrangement provides user with the capabilities to easily align and continuously monitor the marker arrangements with the camera arrangement (it doesn't require multiple cameras and is relatively inexpensive) (column 3, lines 46-48). It would have been obvious to one of ordinary skill in art at the time the invention was made to employ the camera arrangement arranged on the C-arm assembly as suggested by Carol in the x-ray apparatus of Graumann, since such a modification would provide user with the capabilities to easily align and continuously monitor the marker arrangements with the camera arrangement while improving the x-ray system, wherein a line of sight between emitters and receivers not to be blocked by the patient and considerably lowering an overall cost of the x-ray system by using a single camera arrangement.

With respect to claim 5, Carol teaches that the camera arrangement (102) is arranged on a part of the C-arm assembly (41) whose position changes if the C-arm assembly is rotated about the axis of rotation (See Fig.1).

With respect to claim 8, Graumann teaches a multiple cameras (15.1 - 15.9) that in turn have respective fields of view on the X-ray source (9) and the X-ray detector (10) (Fig.1) for the position determination (column 5, lines 42-48 and column 7, lines 1-13).

With respect o claim 9, Graumann teaches a computing unit is provided for the correction by calculation (18) of the image data obtained, by reference to the data obtained relating to the positions of the X-ray source (9) and the X-ray detector (10) (Fig.1; column 5, line 60 – column 6, line 11).

Allowable Subject Matter

3. Claims 2-4, 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 2-4, prior art fails to teach or make obvious an X-ray system characterized in that the camera arrangement is arranged on a part of the C-arm assembly whose position does not change if the C-arm assembly is rotated about the axis of rotation as claimed including all of the limitations of the base claim and any intervening claims.

With respect to claim 6, prior art fails to teach or make obvious an X-ray system characterized in that the camera arrangement being in particular arranged centrally on

the c-arm arranged on the C-arm between the X-ray source and the X-ray detector as claimed including all of the limitations of claim 6, the base claim and any intervening claims.

With respect to claim 7, prior art fails to teach or make obvious an X-ray system characterized in that a further marker arrangement is mounted on the camera arrangement and in that the X-ray apparatus also has a fixed camera arrangement for detecting this marker arrangement, which latter is mounted on the camera arrangement arranged on the C-arm assembly to allow the position of this camera arrangement to be determined as claimed including all of the limitations of claim 7, the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schuetz (US Patent 6,206,566 B1) and Noegel et al. (US Patent 6,206,566 B1) teach the x-ray C-arm apparatus having the receiver/transmitter arrangements for determining extrinsic and intrinsic imaging parameters and having control and computing means for reconstructing 3D images.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
March 30, 2006

IK



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER